AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for processing objects at a data processing system in a network, the method comprising:

receiving a message at a computing device; and

determining that a message header in the message indicates that the message relates to a fragment;

determining that the message header in the message indicates that the fragment is cacheable;

wherein the message comprises an indication that the fragment is non-cacheable to non-fragment-supporting cache management units and an indication that the fragment is cacheable to fragment-supporting cache management units.

2. (Previously Presented) The method of claim 1 further comprising:

storing a fragment from the message in a cache maintained by a cache management unit within the computing device, wherein the cache management unit operates equivalently in support of fragment caching operations whether the computing device acts as a client, a server, or a hub located throughout the network.

3. (Previously Presented) The method of claim 1 further comprising:

determining that a message header in the message indicates that a message body portion of the message is a fragment.

4-5. (Canceled)

6. (Currently Amended) The method of claim 5 wherein the message comprises an HTTP Cache-Control header with a no-cache directive for non-fragment-supporting cache management units and with a directive for caching the fragment for fragment-supporting cache management units.

7-21. (Canceled)

22. (Previously Presented) The method of claim 1 further comprising:

retrieving a set of dependency identifiers from the message, wherein a dependency identifier is generated by a server that originated the fragment; and storing the set of dependency identifiers in association with a source identifier for the fragment.

23. (Original) The method of claim 22 further comprising:
receiving an invalidation request message;
retrieving a dependency identifier from the invalidation request message;
determining a set of fragments that are associated with the dependency identifier; and
purging the set of fragments from the cache in response to determining the set of fragments that are associated with the dependency identifier.

24. (Previously Presented) The method of claim 1 further comprising:
retrieving a set of fragment caching rules from the message, wherein a fragment caching rule determines a manner for generating a cache identifier for the fragment; and
generating a cache identifier for the fragment in accordance with a fragment caching rule.

25. (Original) The method of claim 24 further comprising:
uniquely identifying the fragment using the cache identifier.

26 (Original) The method of claim 24 further comprising:
performing the storing operation using the generated cache identifier for the fragment.

27. (Original) The method of claim 24 further comprising:
obtaining at least a path portion of a URI (Uniform Resource Identifier) associated with the fragment in order to form a base cache identifier; and
applying a fragment caching rule to the base cache identifier to form a cache identifier for the fragment, wherein a fragment caching rule comprises a set of query parameter names and/or cookie names that are used to obtain name-value pairs that are appended to the base cache identifier.

28-31. (Canceled)

32. (Currently Amended) An apparatus for processing objects at a data processing system in a network, the apparatus comprising:

means for receiving a message at a computing device; and

means for determining that a message header in the message indicates that the message relates to a fragment;

means for determining that the message header in the message indicates that the fragment is cacheable;

wherein the message comprises an indication that the fragment is non-cacheable to non-fragment-supporting cache management units and an indication that the fragment is cacheable to fragment-supporting cache management units.

33. (Previously Presented) The apparatus of claim 32 further comprising:

means for storing a fragment from the message in a cache maintained by a cache management unit within the computing device, wherein the cache management unit operates equivalently in support of fragment caching operations whether the computing device acts as a client, a server, or a hub located throughout the network.

34. (Previously Presented) The apparatus of claim 32 further comprising:

means for determining that a message header in the message indicates that a message body portion of the message is a fragment.

35–36. (Canceled)

37. (Currently Amended) The apparatus of claim ~~36~~ 32 wherein the message comprises an HTTP Cache-Control header with a no-cache directive for non-fragment-supporting cache management units and with a directive for caching the fragment for fragment-supporting cache management units.

38-52. (Canceled)

53. (Previously Presented) The apparatus of claim 32 further comprising:

means for retrieving a set of dependency identifiers from the message, wherein a dependency identifier is generated by a server that originated the fragment; and

means for storing the set of dependency identifiers in association with a source identifier for the fragment.

54. (Original) The apparatus of claim 53 further comprising:

means for receiving an invalidation request message; means for retrieving a dependency identifier from the invalidation request message;

means for determining a set of fragments that are associated with the dependency identifier; and

means for purging the set of fragments from the cache in response to determining the set of fragments that are associated with the dependency identifier.

55. (Previously Presented) The apparatus of claim 32 further comprising:

means for retrieving a set of fragment caching rules from the message, wherein a fragment caching rule determines a manner for generating a cache identifier for the fragment; and

means for generating a cache identifier for the fragment in accordance with a fragment caching rule.

56. (Original) The apparatus of claim 55 further comprising:

means for uniquely identifying the fragment using the cache identifier.

57. (Original) The apparatus of claim 55 further comprising:

means for performing the storing operation using the generated cache identifier for the fragment.

58. (Original) The apparatus of claim 55 further comprising:

means for obtaining at least a path portion of a URI (Uniform Resource Identifier) associated with the fragment in order to form a base cache identifier; and

means for applying a fragment caching rule to the base cache identifier to form a cache identifier for the fragment, wherein a fragment caching rule comprises a set of

query parameter names and/or cookie names that are used to obtain name-value pairs that are appended to the base cache identifier.

59-62. (Canceled)

63. (Currently Amended) A computer program product in a computer readable medium for use in a data processing system in a network for processing objects, the computer program product comprising:

instructions for receiving a message at a computing device; and

instructions for determining that a message header in the message indicates that the message relates to a fragment;

instructions for determining that the message header in the message indicates that the fragment is cacheable;

wherein the message comprises an indication that the fragment is non-cacheable to non-fragment-supporting cache management units and an indication that the fragment is cacheable to fragment-supporting cache management units.

64. (Previously Presented) The computer program product of claim 63 further comprising:

instructions for storing a fragment from the message in a cache maintained by a cache management unit within the computing device, wherein the cache management unit operates equivalently in support of fragment caching operations whether the computing device acts as a client, a server, or a hub located throughout the network.

65. (Previously Presented) The computer program product of claim 63 further comprising:

instructions for determining that a message header in the message indicates that a message body portion of the message is a fragment.

66-67. (Canceled)

68. (Currently Amended) The computer program product of claim ~~67~~ 63 wherein the message comprises an HTTP Cache-Control header with a no-cache directive for non-fragment-

supporting cache management units and with a directive for caching the fragment for fragment-supporting cache management units.

69-83. (Canceled)

84. (Previously Presented) The computer program product of claim 63 further comprising:

instructions for retrieving a set of dependency identifiers from the message, wherein a dependency identifier is generated by a server that originated the fragment; and

instructions for storing the set of dependency identifiers in association with a source identifier for the fragment.

85. (Original) The computer program product of claim 84 further comprising:

instructions for receiving an invalidation request message;

instructions for retrieving a dependency identifier from the invalidation request message;

instructions for determining a set of fragments that are associated with the dependency identifier; and instructions for purging the set of fragments from the cache in response-to determining the set of fragments that are associated with the dependency identifier.

86. (Previously Presented) The computer program product of claim 63 further comprising:

instructions for retrieving a set of fragment caching rules from the message, wherein a fragment caching rule determines a manner for generating a cache identifier for the fragment; and

instructions for generating a cache identifier for the fragment in accordance with a fragment caching rule.

87. (Original) The computer program product of claim 86 further comprising:

instructions for uniquely identifying the fragment using the cache identifier.

88. (Original) The computer program product of claim 86 further comprising:

instructions for performing the storing operation using the generated cache identifier for the fragment.

89. (Original) The computer program product of claim 86 further comprising:

instructions for obtaining at least a path portion of a URI (Uniform Resource Identifier) associated with the fragment in order to form a base cache identifier; and

instructions for applying a fragment caching rule to the base cache identifier to form a cache identifier for the fragment, wherein a fragment caching rule comprises a set of query parameter names and/or cookie names that are used to obtain name-value pairs that are appended to the base cache identifier.

90-105. (Canceled)